State Water Resources Control Board

Division of Water Quality
1001 I Street • Sacramento, California 95814 • (916) 341-5864
Mailing Address: P.O. Box 2231 • Sacramento, California • 95812
FAX (916) 341-5808 • Internet Address: sahlinm@swrcb.ca.gov

Terry Tamminen
Secretary for Environmental Protection

Arnold Schwarzenegger
Governor

STUDY GUIDE FOR THE UNDERGROUND STORAGE TANK TESTERS LICENSING EXAMINATION

(Rev. 05/04)

1. Overview of the Examination

The examination covers a wide range of the underground storage tank tester's work emphasizing those skills commonly practiced throughout the State of California. Questions are based on extensive research of accepted trade practices. Assistance was provided by representatives of state and local regulatory agencies as well as tank testers and equipment manufacturers. This research has defined the specific knowledge and skills needed for proper tank testing. All exam questions are based on information found in the study references listed.

THIS EXAMINATION IS STRUCTURED AROUND VOLUMETRIC TESTING PRINCIPLES. IT ALSO ADRESSES GENERIC PROCEDURES COMMON TO TESTING AND DOES NOT REFLECT MANUFACTURER'S SPECIFICATIONS. WE RECOMMEND THAT INDIVIUDALS USING NONVOLUMERTRIC TESTING PROCEDURES REVIEW THE STUDY MATERIAL CAREFULLY.

2. Taking the Examination

Please bring these materials with you in the exam:

- Form of identification which contains a photograph
- A battery-powered calculator (optional)
- Two pencils (any type lead is fine)

NO NOTES, BOOK, OR REFERENCE MATERIALS MAY BE TAKEN INTO THE EXAMINATION ROOM.

When you take the exam, you will be given an exam booklet and a separate answer sheet. For each question, fill in the circle on the answer sheet that matches the answer you choose. If you need to change a response, be sure to erase your first answer completely.

3. Examination Questions

The exam will cover five subject matters:

- Preparing for a tank test
- Conducting a tank test
- Responding to test data
- Post-test activities
- General safety

The exam consists of approximately 90 multiple-choice questions. There are four choices for each question and only one choice is the correct answer. Read each question carefully. Give special attention to key words such as NEVER, BEST, BETTER, MOST, OR LEAST. There are no "trick" questions on the exam.

Choose the one best answer for each question.

Questions vary in form and level of difficulty. The following description of the major types of exam questions will guide you in preparing for the exam. (Answers to the sample questions are on Page 4.)

A. Procedural Correctness Questions:

Some questions describe a procedure and ask you to decide whether the procedure was correct. If the procedure was incorrect, you will be asked to choose the answer that explains why it was incorrect:

EXAMPLE

1. You have placed 5 gallons of Class I-C liquid in a metal container. According to CAL/OSHA, you have proceeded:

   a) correctly
   b) incorrectly; only approved plastic containers may be used for Class I-C liquids.
   c) incorrectly; only glass containers may be used for Class I-C liquids.
   d) incorrectly; containers for Class I-C liquids may hold no more than two gallons.

B. Fill-in-the-Blank Questions

Some questions ask you to fill in the blank with a choice that will make a statement TRUE. Other questions will ask you to select a phrase that will make the statement TRUE.

EXAMPLE:

2. Significant changes in product level can cause _____, which can in turn cause an apparent volume change.

   a) layering
   b) vapor pockets
   c) product evaporation
   d) structural deformation

C. Choose a Phrase

Some questions ask you to choose one phrase that best completes a statement.

EXAMPLE:

3. On night deliveries in which the tank is topped, a warmer underground tank temperature can cause considerable:

   a) contraction of the product
   b) evaporation of the product
   c) overflow due to expansion of the product
   d) overflow due to contraction of the product

4. Study References

The attached Study Outline lists the specific subject areas that you may wish to review when preparing for the exam. Each section in the outline lists study references immediately below the subject.

EXAMPLE:

General Safety

1. Establish fire safety precautions

   1) Reference 6: Section 5159

In this instance, one reference is suggested for studying the subject. Refer to the Study Reference list for Reference 6, which is the California Code of Regulations, Title 8, "Industrial Relations". Review of Section 5159 will assist you in preparing for the exam questions on this subject.

We have enclosed copies of the reference materials except for Reference 4, which is a copyrighted publication. See last page of this Study Guide for more information on references.

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Answers to Sample Questions:

Question	Answer
1	A
2	D
3	C

STUDY OUTLINE

A. Preparing for a Tank Test:

1. Site information

    a. Reference 4, Chapter 1

2. Tank history

    a. Reference 2, Article 2
    b. Reference 3, Section 5
    c. Reference 5, Section 280.12

3.Water table

    a. Reference 1, Chapter 5
    b. Reference 3, Section 5
    c. Reference 4, Chapter 4

4.Identifying product characteristics

    a. Reference 3, Section 5
    b. Reference 4, Chapter 4

5.Dispensers

    a. Reference 3, Section 5
    b. Reference 6, Section 5569

6.Filling a tank

    a. Reference 1, Chapter 4
    b. Reference 2, Section 2650
    c. Reference 3, Section 5
    d. Reference 4, Chapter 4
    e. Reference 5, Section 280.53

7.Spills

    a. Reference 7, Section V

8.Water in the tank

a. Reference 1, Chapter 4

9.Pumps

a. Reference 7, Section III

B. Conducting a Tank Test:

1.Sensors

a. Reference 1, Chapter 4
b. Reference 4, Chapter 4
c. Reference 8, Section 9.5

2.Piping

a. Reference 1, Chapter 4
b. Reference 4, Chapter 1
c. Reference 7, Section III

3.Vapor recovery systems

a. Reference 8, Section 12.1

4.Equipment calibration

a. Reference 4, Chapter 4

5.Tank stability

a. Reference 3, Section 5
b. Reference 4, Chapter 4

6.Coefficient of expansion of product

a. Reference 1, Chapter 4
b. Reference 3, Section 5
c. Reference 4, Chapter 4

7.Recording data

a. Reference 4, chapters 2 and 4

8.Monitoring data

a. Reference 3, Section 5
b. Reference 4, Chapter 4

9.Product line test

a. Reference 1, Chapter 4
b. Reference 2, Section 2643

C. Responding to Test Data

1.Variances/trends

a. Reference 1, Chapter 4
b. Reference 3, Section 5
c. Reference 4, Chapter 4

2.Venting the tank

a. Reference 4, Chapter 4

3.Manways

a. Reference 3, Section 5
b. Reference 4, Chapter 4

4.Vapor recovery systems

a. Reference 8, Section 12.2

5.Valves

a. Reference 1, Chapter 4

6.Air eliminators

a. Reference 7, Section III

D. Post-Test Activities

1.Pipe location

a. Reference 7, Section III

2.Weather Effects

a. Reference 4, Chapter 4

3.Recalibration

a. Reference 4, Chapter 2

4.Determining leak rate

a. Reference 4, chapter 4
b. Reference 5, Section 280.40

5.Communicating with the client

a. Reference 1, Chapter 4
b. Reference 2, Section 2643
c. Reference 5, Section 280.40
d. Reference 7, Section II

E. General Safety

1.Fire safety precautions

a. Reference 6, Sections 5415, 5572, and 6150

2.Protective equipment

a. Reference 6, Section 5159

3.Safety barriers

a. Reference 6, Sections 5532 and 5581
b. Reference 4, Chapter 2

GLOSSARY OF ACRONYMS AND ABBREVIATIONS

The following acronyms and abbreviations are widely used in reference materials and in the tank testing trade. You should become familiar with them here because they will not appear in full text in the examination.

COE . . . . . Coefficient of Expansion

EPA . . . . . Environmental Protection Agency

UST . . . . . Underground Storage Tank

GPM . . . . . Gallons Per Minute

GPH . . . . . Gallons Per Hour

CAL/OSHA . . . . California Occupational Safety and Health Administration

NFPA . . . . . National Fire Protection Association

STUDY GUIDE REFERENCE LIST

We have copied and enclosed only the pertinent portions of each of these publications. If you prefer, you may order the complete document as indicated.

Reference 4, "Underground Storage Systems" is a copyrighted book so we cannot include it with the rest of the reference materials. You may order a copy of the book from the publisher (Lewis Publishers) by calling 1-800-272-7737 or 313-475-8619. The book currently sells for $59.95. You may find the book in local bookstores, which carry technical references, or at a college or university campus.

1. National Fire Protection Association 329 – "Underground Leakage of Flammable and Combustible Liquids", 1987 Edition, Item No. BU-329-87, $13.00 (1-800-344-3555)

2. California Code of Regulations, Title 23, "Waters", Office of Procurement, $15.00 (916-973-3700)

3. Underground Tank Leak Detection Methods: A State-of-the-Art Review, EPA/600/2-86/001, January 1986, NTIS Pub. #PB86-137155, $19.95 (703-487-4600)

4. Underground Storage Systems, Leak Detection and Monitoring, by Todd G. Schwendeman and H. Kendall Wilcox, 1987, Lewis Publishers, Inc., $95.00 (1-800-272-7737)

5. "Underground Storage Tanks; Technical Requirement and State Program Approval", in 40 CFT, Part 280, September 23, 1988, U.S. Environmental Protection Agency, Office of Underground Storage Tanks, P.O. Box 6044, Rockville, MD 20850.

6. California Code of Regulations, Title 8, "Industrial Relations", Chapter 4, "Division of Industrial Safety" Subchapter 7, "General Industry Safety Orders", Office of Procurement, $25.00 (916-973-3700)

7. Causes of Release from UST Systems, Final Report to U.S. EPA/OUST, EPA Contract: 68-01-7053, September 30, 1987, U.S. Environmental Protection Agency, Office of Underground Storage Tanks, P.O. Box 6044, Rockville, MD 20850.

8. "Installation of Underground Petroleum Storage Systems", API 1615, November 1987, American Petroleum Institute, $14.00 (202-682-8375)